





# Analyzing the macroeconomic impacts of the Tax Cuts and Jobs Act on the US economy and key industries

By Brandon Pizzola, Robert Carroll and James Mackie

The views expressed are those of the authors and do not necessarily represent the views of Ernst & Young LLP or any other member firm of the global Ernst & Young organization.

This report estimates the macroeconomic impacts of the Tax Cuts and Jobs Act (TCJA) (Public Law 115-97) on the US economy and on key industries. In each of the next 10 years, the TCJA will increase noticeably the size of the overall US economy. In addition, all major industries benefit initially. Beyond 10 years, the TCJA's impact on the size of the overall US economy will be more moderate but still positive. Some industries will contract in the long run, however, because they will be hit particularly hard by the TCJA's revenue-raising provisions.

# Key findings include:

- In all years, the TCJA will increase the size of the overall economy, measured as gross domestic product (GDP). Because some tax-reducing provisions sunset while some tax-increasing provisions are delayed? the largest increases occur in the first five years. In the long run, the TCJA will no more than modestly increase the size of the US economy.
  - ► The level of GDP will be, on average, 1.2% higher over the first five years (2018-22) and 0.8% higher over the second five years (2023-27).
  - In the long run when the economy has fully adjusted to the TCJA's changes in tax policy the level of real GDP will be 0.2% higher.

- Over the first 10 years, the TCJA will increase GDP in each of the 13 broad industries that make up the US economy, but the effects are not uniformly distributed across industries. Construction and durable manufacturing, for example, see the largest increases, and utilities and other services the smallest.
- In the long run, the TCJA's effects on specific industries differ sharply from its effects over the first 10 years.
  - GDP declines in durable manufacturing and nondurable manufacturing.
  - GDP increases in the other broad industries, but the increases are smaller than they are in the short and medium run.

Ernst & Young LLP's Quantitative Economics and Statistics (QUEST) group estimated these impacts using the EY QUEST macroeconomic model of the US economy. This model captures major features of the US economy and the key economic decisions of businesses and households affected by tax policy. It is similar to a model the Joint Committee on Taxation (JCT) used in its macroeconomic analysis of the TCJA.<sup>3</sup>

While this article provides a general overview of the macroeconomic impacts of the TCJA on the US economy and broad industry groupings, businesses and industry groups should consider undertaking more detailed analyses that quantify the impacts for their specific company, subindustry, suppliers, competitors and markets. This information can help businesses understand how the TCJA may affect future business plans and can inform discussions with stakeholders and policymakers.



# Impact of the TCJA on the after-tax return to investment and after-tax reward to work

The TCJA has significant implications for the US economy, affecting the decisions of both households and businesses through changes in the after-tax return to investment and aftertax reward to work. A measure commonly used by economists, and used in this analysis, to measure the impact of taxation on the incentive to undertake a new investment is the marginal effective tax rate (METR). The METR is an expansive measure that captures the effects on investment incentives of many major tax provisions, including statutory tax rates at the company and at the investor level (including the impact of the deduction for qualified pass-through income), depreciation deductions, interest expense deductions and deferral of tax liability.

The METR reflects taxes as a share of the total pre-tax return on an investment that just breaks even. The taxation of the return on a new, breakeven investment is a key margin on which to measure and evaluate the impact of policy change. This is because firms will continue making new investments until the return on the last dollar invested just barely breaks even (i.e., covers its opportunity cost). So it generally is the effect of taxation on this marginal investment that matters for determining how investment responds (whether it rises or falls) to tax policy changes. In general, a higher (lower) METR means a lower (higher) incentive to invest.

Figure 1 presents the METR for the business sector of the US economy for each of the first 10 years (2018-27) and in the long run (i.e., after all sunsets, phase-ins and phase-outs in the TCJA have occurred and the economy has fully adjusted).<sup>5</sup> The METR is estimated to decline three percentage points in 2018 and five percentage points in 2019 before reaching the peak decline of approximately seven percentage points in 2020-22. This pattern in the first five years largely reflects the TCJA's change in expensing: while the TCJA allows 100% expensing in each of the first five years (through 2022), pre-TCJA law would have allowed 40% bonus depreciation in 2018, 30% bonus depreciation in 2019 and no bonus depreciation thereafter.

In the later years of the 10-year budget window, the METR is estimated to decrease less because expensing generally phases out by 2027; the limitation on the deductibility of net interest expense switches from a less stringent definition of adjusted taxable income consisting of earnings before interest, taxes, depreciation and amortization (EBITDA) to the more stringent earnings before interest and taxes (EBIT) definition in 2022; research and experimentation (R&E) expenditures are required to be capitalized and amortized starting in 2022; and the individual taxpayer provisions – notably the 20% deduction for qualified pass-through income – generally sunset at the end of 2025.

After all of the phase-ins and phase-outs of the TCJA fully occur (i.e., in the long run), the METR on new business investment is estimated to decline by less than 0.5 percentage points. The reduction in the METR is small because provisions that lower the METR, e.g., the reduction in the corporate income tax (CIT) rate, are largely offset by provisions that raise the METR, e.g., the restriction on the deductibility of interest payments and the amortization of R&E expenditures.<sup>6</sup>

**Figure 1.** Estimated percentage-point change in the marginal effective tax rate on new business investment from the TCJA (2018-27, long run)

2019 2020 2021 2022 2018 2023 2024 2025 2026 2027 Long run -1% -2% -3% -5% -5%

\*Less than 0.5% in magnitude

**Note:** The EY QUEST macroeconomic model of the US economy is used to estimate the METRs relative to the law in place prior to the TCJA. Under this pre-TCJA forecast, the METR on new investment in the business sector is 21% in 2018, 22% in 2019 and 24% thereafter. This model includes behavioral changes related to leverage and organizational form, plus interest rate changes related to potential crowding out, among other considerations. Notably, when aggregating the cost of capital across industries to compute the METRs, pre-TCJA baseline forecast weighting is used rather than the post-TCJA composition of the US economy. These weights are used to more clearly isolate the impact from the change in law. The business sector does not include owner-occupied housing or government but does include the entirety of the corporate and pass-through sectors. Figures are rounded.

Source: EY analysis.



The TCJA also has significant implications for the after-tax reward to work through the average marginal tax rate on wages and salaries (i.e., the average tax rate on an additional dollar of wages and salaries). In particular, as the after-tax return for an additional hour of work increases, the labor supply can be expected to increase as individuals enter the workforce or increase the number of hours they work. The TCJA is estimated to reduce the average marginal tax rate on wages and salaries from 24% to 21% over the 2018-25 period – a reduction of more than 10%.

Notable changes to the individual income tax include reducing individual income tax rates (e.g., the top rate is reduced from 39.6% to 37%), changing the thresholds for individual income tax brackets and nearly doubling the standard deduction. The changes to the individual income tax system generally sunset at the end of 2025. As a result, the average marginal tax rate on wages and salaries does not decline in the long run.<sup>8</sup>

Cuts in taxes on capital income also can help workers. A lower METR will encourage additional investment that improves workers' situations because increases in capital intensity (i.e., the capital-labor ratio) results in increases in worker productivity, and thereby increases in pre-tax wages. As previously discussed (Figure 1), the TCJA reduces the METR in the long run (albeit only slightly). So it is reasonable that investment and the capital stock would increase slightly, thereby putting some upward pressure on real pre-tax wages in the long run.

# Macroeconomic impacts of the TCJA on the US economy and key industries

The EY QUEST macroeconomic model of the US economy is used to estimate the macroeconomic impacts of the TCJA. This model is designed to capture the major features of the US economy and the key economic decisions of businesses and households affected by tax policy and is similar to a model the JCT used in its macroeconomic analysis of the TCJA.<sup>9</sup>

A macroeconomic analysis of the TCJA must confront the Act's effects on the federal budget deficit. The TCJA raises the federal budget deficit directly by lowering federal tax revenue by nearly \$1.5 trillion over the 10-year budget window and indirectly by the induced increase in the interest cost of the national debt. With this analysis' model, deficit-increasing tax cuts like the TCJA must eventually be paid for by other tax increases or by spending cuts. Deficits can't grow forever, or eventually the government would consume the entire economy. In the model, the government must eventually return to a fiscally sustainable budgetary path, which in broad terms means a stable debt-to-GDP ratio.

Consistent with Congressional rules for the dynamic scoring of tax legislation, this simulation allows deficits to accumulate over the 10-year budget window. Outside the 10-year window, the analysis reduces government transfer payment spending to lower the debt-to-GDP ratio to its initial level over the following 20 years. This form of financing for the TCJA's deficit causes little or no reduction in incentives to work and invest. As a result, simulated macro-growth effects are larger than they would be if marginal tax increases (e.g., an increase in the CIT rate) were used (eventually) to return the federal budget to a sustainable budgetary path. In addition, because the TCJA's tax cuts are approximately paid for by reductions in government spending, at least in the longer run, there is limited crowding out of private investment, as there could be should the tax cuts continue to be deficit-financed over a longer time horizon.

# **Economy-wide impacts**

### **GDP**

As seen in Table 1, the TCJA is estimated to increase the level of GDP, on average, by 1.2% over the first five years (2018-22), 0.8% over the second five years (2023-27) and 0.2% in the long run relative to its level in pre-TCJA baseline projections. When measured relative to the \$19.4 trillion US economy in 2017, these estimates imply that the TCJA will increase the size of the US economy by an average of \$235 billion over the first five years (2018-22) and by an average of \$155 billion over the second five years (2023-27).

These estimated impacts occur primarily through changes in the capital stock (via changes in investment) and the labor market (via changes in wages and the labor supply). The increase is largely attributable to the lower CIT rate, the deduction for qualified pass-through business income, 100% expensing and lower individual tax rates, in part through rate reduction and in part through changes in the rate brackets.



#### Investment

The level of investment is estimated to increase, on average, 7.3% over the first five years (2018-22) relative to pre-TCJA baseline projections but decrease 6.9% relative to pre-TCJA baseline projections over the second five years (2023-27). This reflects, in part, the shifting of investment from the second five years (2023-27) to the first five years (2018-22) due to the temporary expensing provision. Overall, investment increases slightly within the 10-year budget window so that the capital stock increases, slightly, on average: 0.6% above pre-TCJA baseline projections over the first five years (2018-22) and 0.8% over the second five years (2023-27). Because of the relatively small long-run decrease in the METR – as presented in Figure 1 above – the long-run capital stock is estimated to be only 0.3% above pre-TCJA baseline projections.

# Labor supply and wages

The labor supply is estimated to increase, on average, 1.5% over the first five years (2018-22) and 0.8% over the second five years (2023-27) relative to pre-TCJA baseline projections. This is in large part driven by the lower individual income tax rates and the corresponding reduction in the average marginal tax rate for wages and salaries for the first eight years after tax reform (i.e., until the individual income tax changes in the TCJA generally sunset at the end of 2025). This can be seen in the increase in the real after-tax wage rate, which is estimated to be 3.6% above pre-TCJA baseline projections over the first five years (2018-22) and 2.6% above pre-TCJA baseline projections over the second five years (2023-27), on average. Because the individual income tax system changes generally sunset at the end of 2025, the long-run real after-tax wage rate is estimated to increase by only 0.1% above pre-TCJA baseline projections, and the size of the labor supply is estimated to be approximately unchanged. There is still an estimated long-run increase in the real after-tax wage rate due to the estimated increase in the US economy's capital intensity.

Notably, these estimated impacts on the labor supply and after-tax wage reflect the average effect across the US economy and will not show important differences between taxpayers. For example, impacts are likely to differ across the income distribution and between taxpayers in lower- versus higher-tax states.

**Table 1.** Estimated macroeconomic impact of the TCJA on the US economy

Percent change in level relative to pre-TCJA baseline projections

	2018-22	2023-27	2018-27	Long run
GDP	1.2%	0.8%	1.0%	0.2%
Consumption	*	3.1%	1.6%	0.2%
Investment	7.3%	-6.9%	0.2%	0.3%
Capital stock	0.6%	0.8%	0.7%	0.3%
After-tax wage rate	3.6%	2.6%	3.1%	0.1%
Labor supply	1.5%	0.8%	1.1%	*

<sup>\*</sup>Less than 0.05% in magnitude

Note: Macroeconomic impacts estimated with the EY QUEST macroeconomic model of the US economy. In this model, tax policy affects the incentives to work, save and invest and to allocate capital and labor among competing uses. Representative individuals and firms factor the after-tax return from work and savings into their decisions of how much to produce, work and save. The simulation allows deficits for 10 years after the policy change and then adjusts government transfers to reduce the debt-to-GDP ratio to the initial level over the following 20 years. In this model, increased deficits reduce the amount of funds available for investment and thus result in the "crowding out" of investment. The JCT estimated the TCJA would reduce revenue nearly \$1.5 trillion, on a conventional basis, during the budget window. Figures are rounded.

Source: EY analysis.



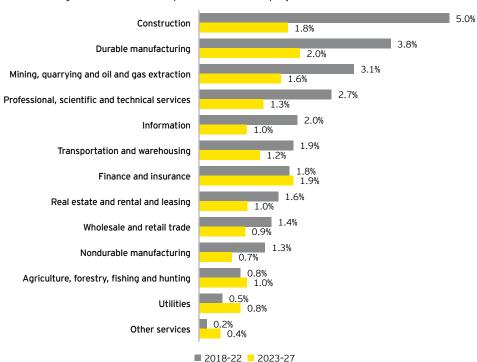
# Industry-level GDP impacts, 2018-27

The GDP effects of the TCJA are not uniformly distributed across industries. Figure 2 disaggregates the GDP effects over the first five years (2018-22) and second five years (2023-27) into 13 broad industry groups: (1) agriculture, forestry, fishing and hunting; (2) mining, quarrying and oil and gas extraction; (3) utilities; (4) construction; (5) durable manufacturing; (6) nondurable manufacturing; (7) wholesale and retail trade; (8) transportation and warehousing; (9) information; (10) finance and insurance; (11) real estate and rental and leasing; (12) professional, scientific and technical services: and (13) other services. In total, these 13 broad industries include the entirety of the business sector but exclude owner-occupied housing and government. The industries are ordered by the magnitude of the percent change in GDP relative to the level in pre-TCJA baseline projections over the first five years (2018-22).

Over the first five years (2018-22), the largest percent changes in industry GDP relative to pre-TCJA baseline projections are estimated to be, on average, in the construction (5.0%); durable manufacturing (3.8%); mining, quarrying and oil and gas extraction (3.1%); professional, scientific and technical services (2.7%): and information (2.0%) industries. Over the second five years (2023-27), the largest impacts are estimated to be smaller, on average, but apply to a similar list of industries: durable manufacturing (2.0%); finance and insurance (1.9%); construction (1.8%); mining, quarrying and oil and gas extraction (1.6%); and professional, scientific and technical services (1.3%). While there are a variety of factors at work, many of these industries are capital-intensive (and so benefit from expensing), are less affected by the TCJA base broadening (e.g., the net interest expense deduction limitation) and/ or are closely associated with the economic activity that supports investment.

Figure 2. Estimated impact of the TCJA on GDP, by industry (2018-27)

Percent change in level relative to pre-TCJA baseline projections



Note: Durable manufacturing includes wood products manufacturing, nonmetallic mineral products manufacturing, primary metals manufacturing, fabricated metal products manufacturing, machinery manufacturing, computer and electronic products manufacturing, electrical equipment, appliances and components manufacturing, transportation equipment manufacturing, furniture and related products manufacturing and miscellaneous manufacturing. Nondurable manufacturing includes food, beverage and tobacco products manufacturing, textile mills and textile product mills manufacturing, apparel and leather and allied products manufacturing, paper products manufacturing, printing and related support activities manufacturing, petroleum and coal products manufacturing, chemical products manufacturing and plastics and rubber products manufacturing. Macroeconomic impacts are estimated using the EY QUEST macroeconomic model of the US economy. In this model, tax policy affects the incentives to work, save and invest and to allocate capital and labor among competing uses. Representative individuals and firms incorporate the after-tax return from work and savings into their decisions of how much to produce, save and work. The simulation allows deficits for 10 years after the policy change and then adjusts government transfers to reduce the debt-to-GDP ratio to the initial level over the following 20 years. In this model, increased deficits reduce the amount of funds available for investment and thus result in the "crowding out" of investment. The JCT estimated the TCJA would reduce revenue nearly \$1.5 trillion over the budget window, on a conventional basis. Figures are rounded.

Source: EY analysis.

5



## Industry-level GDP impacts, long run

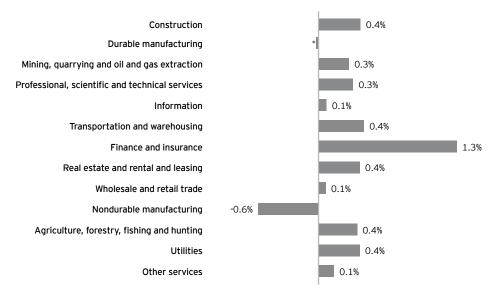
Figure 3 presents the long-run impact of the TCJA on the level of industry GDP relative to pre-TCJA baseline projections. The long-run scenario assumes all sunsets, phase-ins and phase-outs in the TCJA have occurred and the economy has fully adjusted to the tax system. The industries in Figure 3 are ordered by the magnitude of the percent change in GDP relative to the level in pre-TCJA baseline projections over the first five years (2018-22) (as seen in Figure 2).

The long-run changes in industry GDP are very modest and reflect direct tax effects on the industry as well as indirect effects operating through factor and goods markets. The long-run industry results tend to reflect the industry-specific net impact of CIT rate reduction, the net interest expense deduction limitation and the mandatory amortization of R&E expenditures. Industries with above-average expansions, for example, tend to benefit in a sense disproportionately from the CIT rate reduction. Those with smaller expansions or contractions tend to be hit harder by the net interest expense deduction limitation or the required amortization of R&E.

The largest percent changes relative to the pre-TCJA baseline are, on average, in the finance and insurance (1.3%), transportation and warehousing (0.4%), construction (0.4%), utilities (0.4%), and real estate and rental and leasing (0.4%) industries. The two industries that decline – durable and nondurable manufacturing – include research-intensive industries (e.g., computer and electronic products manufacturing) that are estimated to receive a notable increase in their METR from R&E amortization.

Figure 3. Estimated impact of the TCJA on GDP, by industry (long run)

Percent change in level relative to pre-TCJA baseline projections



<sup>\*</sup>Magnitude less than 0.05%

Note: Durable manufacturing includes wood products manufacturing, nonmetallic mineral products manufacturing, primary metals manufacturing, fabricated metal products manufacturing, machinery manufacturing, computer and electronic products manufacturing, electrical equipment, appliances and components manufacturing, transportation equipment manufacturing, furniture and related products manufacturing and miscellaneous manufacturing. Nondurable manufacturing includes food, beverage and tobacco products manufacturing, textile mills and textile product mills manufacturing, apparel and leather and allied products manufacturing, paper products manufacturing, printing and related support activities manufacturing, petroleum and coal products manufacturing, chemical products manufacturing and plastics and rubber products manufacturing. Macroeconomic impacts are estimated with the EY QUEST macroeconomic model of the US economy. In this model, tax policy affects the incentives to work, save and invest and to allocate capital and labor among competing uses. Representative individuals and firms incorporate the after-tax return from work and savings into their decisions of how much to produce, save and work. The simulation allows deficits for 10 years after the policy change and then adjusts government transfers to reduce the debt-to-GDP ratio to the initial level over the following 20 years. In this model, increased deficits reduce the amount of funds available for investment and thus result in the "crowding out" of investment. The JCT estimated the TCJA would reduce revenue nearly \$1.5 trillion over the 10-year budget window, on a conventional basis. Figures are rounded.

**Source:** EY analysis.

# Conclusion

While this analysis breaks down and explains some of the effects of the TJCA on the overall economy and a variety of industry groups, businesses also need to understand – through financial and economic modeling – how tax reform will impact their company and industry. In addition to examining their own specific situations, businesses should also assess the effect of tax reform on their customers, competitors, suppliers and employees.



# About these estimates

The EY QUEST macroeconomic model of the US economy is similar to general equilibrium models that have been used by the Congressional Budget Office, JCT and US Treasury Department. <sup>11</sup> In this model, tax policy affects the incentives to work, save and invest and to allocate capital and labor among competing uses. Representative individuals and firms incorporate the after-tax return from work and savings into their decisions of how much to produce, save and work.

The general equilibrium methodology accounts for changes in equilibrium prices in factor (i.e., capital and labor) and goods markets and simultaneously accounts for the behavioral responses of individuals and businesses to changes in taxation. Behavioral changes are estimated in the overlapping generations (OLG) framework, whereby representative individuals incorporate changes in current and future prices when deciding how much to consume and save in each period of their life.

An overview of the model follows:

#### **Production**

Firm production is modeled with the constant elasticity of substitution (CES) functional form, in which firms choose the optimal level of capital and labor subject to the gross-of-tax cost of capital and gross-of-tax wage. The model includes industry-specific detail through use of differing costs of capital, factor intensities and production function scale parameters. Such a specification accounts for differential use of capital and labor between industries as well as distortions in factor prices introduced by the tax system. The cost-of-capital measure models the extent to which the tax code discriminates by asset type, organizational form and source of finance.

The industry detail included in this model corresponds approximately with three-digit North American Industry Classification System (NAICS) codes and is calibrated to a stylized version of the 2014 US economy. Because industry outputs are typically a combination of value added (i.e., the capital and labor of an industry) and the finished production of other industries (i.e., intermediate inputs), each industry's output is modeled as a fixed proportion of an industry's value added and intermediate inputs to capture interindustry linkages. These industry outputs are then bundled together into consumption goods that consumers purchase.

#### Consumption

Consumer behavior is modeled through use of an OLG framework that includes 55 generational cohorts (representing adults aged 21 to 75). Thus, in any one year, the model includes a representative individual optimizing lifetime consumption and savings decisions for each person aged 21 through 75 (i.e., 55 representative individuals) with perfect foresight. For each generational cohort, the endowment of human capital changes with age – growing early in life and declining later in life – following the estimate of Altig et al. (2001). The model can be run with 55 generational cohorts (one for each age) or 660 generational cohorts (one for each age and each of 12 income groups). The latter specification includes, for each age, a representative individual for each income decile plus a breakout of the top and bottom 2% of the income distribution.

The utility of representative individuals is modeled as a CES function, allocating a composite commodity consisting of consumption goods and leisure over their lifetimes. Representative individuals optimize their lifetime utility through their decisions of how much to consume, save and work in each period subject to their preferences and the after-tax returns from work and savings in each period. In determining their labor supply, representative individuals respond to the after-tax return to labor, as well as their overall income levels, in determining whether to work and thereby earn income that is used to purchase consumption goods or to consume leisure by not working.

#### Other features

The model includes a simple characterization of both federal and state and local governments. Government spending is assumed to be used to either (1) transfer payments to representative individuals or (2) for the provision of public goods. Public goods are assumed to be provided by the government in fixed quantities through the purchase of industry outputs as specified in a Leontief function. This spending in the model can be financed by collecting taxes or borrowing. Borrowing, however, cannot continue indefinitely in this model, so toggles are included to allow government transfers, government provision of public goods or government tax policy to be used to achieve a selected debt-to-GDP ratio after a selected number of years. This selected debt-to-GDP ratio could be, for example, the initial debt-to-GDP ratio or the debt-to-GDP ratio a selected number of years after policy enactment.

THE WORLD

Additionally, the model is an open economy model that includes both capital and trade flows between the United States and the rest of the world. International capital flows are modeled through the constant portfolio elasticity approach of Gravelle and Smetters (2006). This approach assumes that international capital flows are responsive to the difference in after-tax rates of return in the United States and the rest of the world through a constant portfolio elasticity expression. Trade is modeled through use of the Armington assumption, wherein products made in the United States versus the rest of the world are imperfect substitutes.

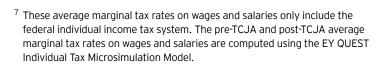
Table A-1. Key model parameters

Intertemporal substitution elasticity	
Intratemporal substitution elasticity	
Leisure share of time endowment	
International capital flow elasticity	
Capital-labor substitution elasticity	
Adjustment costs	2.0

Source: Key model parameters are generally from Joint Committee on Taxation, Macroeconomic Analysis Of The Conference Agreement For H.R. 1, The "Tax Cuts And Jobs Act," December 22, 2017 (JCX-69-17) and Jane Gravelle and Kent Smetters, "Does the Open Economy Assumption Really Mean That Labor Bears the Burden of a Capital Income Tax?," Advances in Economic Analysis and Policy 6(1) (2006): Article 3.

#### **Endnotes**

- <sup>1</sup> All estimates presented by this analysis are relative to the Congressional Budget Office's projected baseline prior to enactment of the TCJA.
- <sup>2</sup> The major base-reducing provisions include 100% expensing and the deduction for qualified pass-through income. The major base-increasing provisions include the limitation on the deductibility of net interest expense and the required amortization of research and experimentation expenditures.
- <sup>3</sup> The JCT estimated that the TCJA will increase the level of US GDP, on average, by 0.7% over 10 years, a smaller impact than estimated by this analysis. The JCT analysis does not present long-run impacts. See Joint Committee on Taxation, "Macroeconomic Analysis of The Conference Agreement For H.R. 1, The 'Tax Cuts And Jobs Act'," JCX-69-17, December 22, 2018, p. 5.
- Additional considerations arise in an international context. In particular, recent research suggests that when US and foreign multinational corporations are deciding whether and how much to invest in the United States versus abroad, these international investments are largely discrete location choices and responsive to their total tax, not just the tax at the margin. That is, multinational companies first make a discrete choice of where to locate their facilities and then determine the scale of investment to maximize profitability.
- <sup>5</sup> Because tax rules vary across assets (e.g., buildings vs. machinery), industries, legal forms of organization (e.g., corporations vs. partnerships) and financing sources (e.g., debt vs. equity), METRs vary along these same dimensions. The METRs shown in Figure 1 are aggregate measures calculated as weighted averages of the METRs appropriate for the various categories of assets, industries, organizational forms and financing.
- <sup>6</sup> The TCJA permanently slows down the inflation indexing of tax parameters by switching to a so-called "chained" inflation index (to chained CPI-U). This switch could increase tax rate bracket creep, thereby raising tax rates on wage and pass-through business income. This potential effect is relatively minor at the low inflation rates that have characterized the US economy in recent years and that many forecast into the future. The inflation indexing change is not modeled in this analysis.



- <sup>8</sup> The permanent reduction in inflation indexing (the switch to chained CPI-U) under the TCJA is not modeled. See note 6 above.
- <sup>9</sup> Ibid, supra note 3.
- $^{10}$  International provisions are generally modeled as impacting average tax rates but not marginal tax rates.
- <sup>11</sup> See, for example, Shinichi Nishiyama, "Fiscal Policy Effects in a Heterogeneous-Agent Overlapping-Generations Economy With an Aging Population," Congressional Budget Office, Working Paper 2013-07, December 2013; Joint Committee on Taxation, "Macroeconomic Analysis of the 'Tax Reform Act of 2014," February 2014 (JCX-22-14); JCT, "Macroeconomic Analysis of Various Proposals to Provide \$500 Billion in Tax Relief," March 2005 (JCX-4-05); and, US Department of the Treasury, "The President's Advisory Panel on Federal Tax Reform, Simple, Fair, & ProGrowth: Proposals to Fix America's Tax System," November 2005.
- <sup>12</sup> See David Altig, Alan Auerbach, Laurence Koltikoff, Kent Smetters, and Jan Walliser, "Simulating Fundamental Tax Reform in the United States," American Economic Review 91(3) (2001): 574-595.
- <sup>13</sup> See Jane Gravelle and Kent Smetters, "Does the Open Economy Assumption Really Mean That Labor Bears the Burden of a Capital Income Tax?" Advances in Economic Analysis and Policy 6(1) (2006): Article 3.



# EY | Assurance | Tax | Transactions | Advisory

#### About EY

EY is a global leader in assurance, tax, transaction and advisory services. The insights and quality services we deliver help build trust and confidence in the capital markets and in economies the world over. We develop outstanding leaders who team to deliver on our promises to all of our stakeholders. In so doing, we play a critical role in building a better working world for our people, for our clients and for our communities.

EY refers to the global organization, and may refer to one or more, of the member firms of Ernst & Young Global Limited, each of which is a separate legal entity. Ernst & Young Global Limited, a UK company limited by guarantee, does not provide services to clients. For more information about our organization, please visit ey.com.

Ernst & Young LLP is a client-serving member firm of Ernst & Young Global Limited operating in the US.

© 2018 Ernst & Young LLP. All Rights Reserved.

SCORE No. 02099-181US CSG No. 1803-2651174 ED None

This material has been prepared for general informational purposes only and is not intended to be relied upon as accounting, tax or other professional advice. Please refer to your advisors for specific advice.

# ey.com

# **Contacts**

Robert Carroll +1 202 327 6032 robert.carroll@ey.com James Mackie +1 202 327 6000 james.mackie@ey.com

Brandon Pizzola +1 202 327 6864 brandon.pizzola@ey.com